Next 2 Page(s) In Document Denied

~~TOP SECRET~~

14198

NPIC/R-810/64
August 1964

25X1

Copy 4
19 Pages

PHOTOGRAPHIC INTERPRETATION REPORT

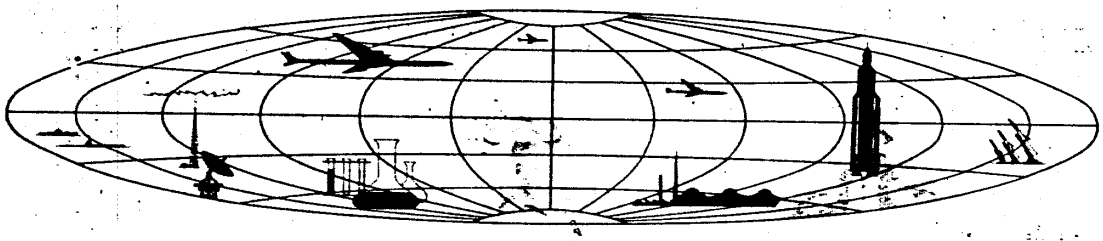
INSTRUMENTATION KAPUSTIN YAR/VLADIMIROVKA MISSILE TEST CENTER, USSR

CIA

DIA

25X1

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER



~~TOP SECRET~~

GROUP 1
Excluded from automatic downgrading and declassification

TOP SECRET CHESS RUFF

25X1

PHOTOGRAPHIC INTERPRETATION REPORT

INSTRUMENTATION KAPUSTIN YAR/VLADIMIROVKA MISSILE TEST CENTER, USSR

25X1

NPIC/R-810/64

August 1964

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

25X1

TOP SECRET CHESS RUFF

25X1

25X1

NPIC/R-810/64

INTRODUCTION

This report is in reply to NSA requirement P0432/R39-64 requesting identification and cataloguing of all instrumentation sites associated with the subject installation. Using April 1964 photography (Mission 4007), sites have been located with ACIC coordinates and grouped by site signature and function insofar as possible.

Some of the sites have been named with respect to the launch complex with which they are associated (A and C groups). Remaining sites have been named with respect to the nearest launch complex; however, this does not necessarily imply they are functionally associated with that complex.

Mission 4007 covers a major portion of the Kapustin Yar surface-to-surface missile launch area and the Vladimirovka aerodynamic test rangehead. Kapustin Yar/Vladimirovka Missile Test Range instrumentation is far-reaching, however, and for this reason Mission 4007 coverage of the instrumentation described in this report is shown on Figure 1.

Mission 4007 photography gives evidence of at least three types of instrumentation at the Kapustin Yar/Vladimirovka Missile Test Center (KY/Vlad MTC) rangehead: conventional early-warning and tracking radar, interferometer (phase measuring), and a third type whose function cannot be identified on available photography, but could possibly be long and short baseline radio and/or optical guidance, the first employing stable oscillators. 1/ Sites A-1 through A-6, C-1 through C-4, and D-1 through D-7 may possibly be this third type. These sites are described as probable radio/optical instrumentation sites in this report.

All sites shown in Figures 2 through 22 are drawn from unrectified photography.

RADAR TRACKING INSTRUMENTATION SITES

Sites G-1, G-2, and G-3 have been grouped together because of their site signature likeness and, more importantly, because of their probable similarity of function. It is apparent, by the detection of BAR LOCK and STONE CAKE antennas on Mission 4007 photography, that these three sites utilize early-warning and target-acquisition radar.

Significantly, the southeast azimuth 90 degrees from the orientation of Sites G-1 and G-2 is oriented toward Fort Shevchenko on the Caspian Sea. Mission 4007 coverage of the Fort Shevchenko area revealed a probable instrumentation site containing a probable BIG BAR, a probable TOKEN, a probable BAR LOCK, and a probable STONE CAKE antenna, among other smaller antennas. The Fort Shevchenko area, as well as the Vladimirovka test range, have been associated with aerodynamic weapons testing, and they may operate in conjunction with each other during these tests.

Instrumentation Site G-1

Site G-1 (Figure 2) is located at 48-25-10N 46-14-40E, 1.2 nm northwest of the surface-to-air missile (SAM) site at Launch Complex G. The site consists of a double-fenced rectangular area measuring 1,730 by 1,525 feet. It is one of the more recently constructed sites at KY/Vlad MTC and is served by an improved road from the southeast.

Site G-1 contains three elevated radar positions constructed on large earth mounds. Its northwest position is occupied by a probable BAR LOCK radar set. Its northern position is occupied by a probable STONE CAKE radar set. The remaining position is unoccupied although a probable antenna, which may be down for maintenance, appears near the base of this position.

25X1

25X1

25X1

NPIC/R-810/64

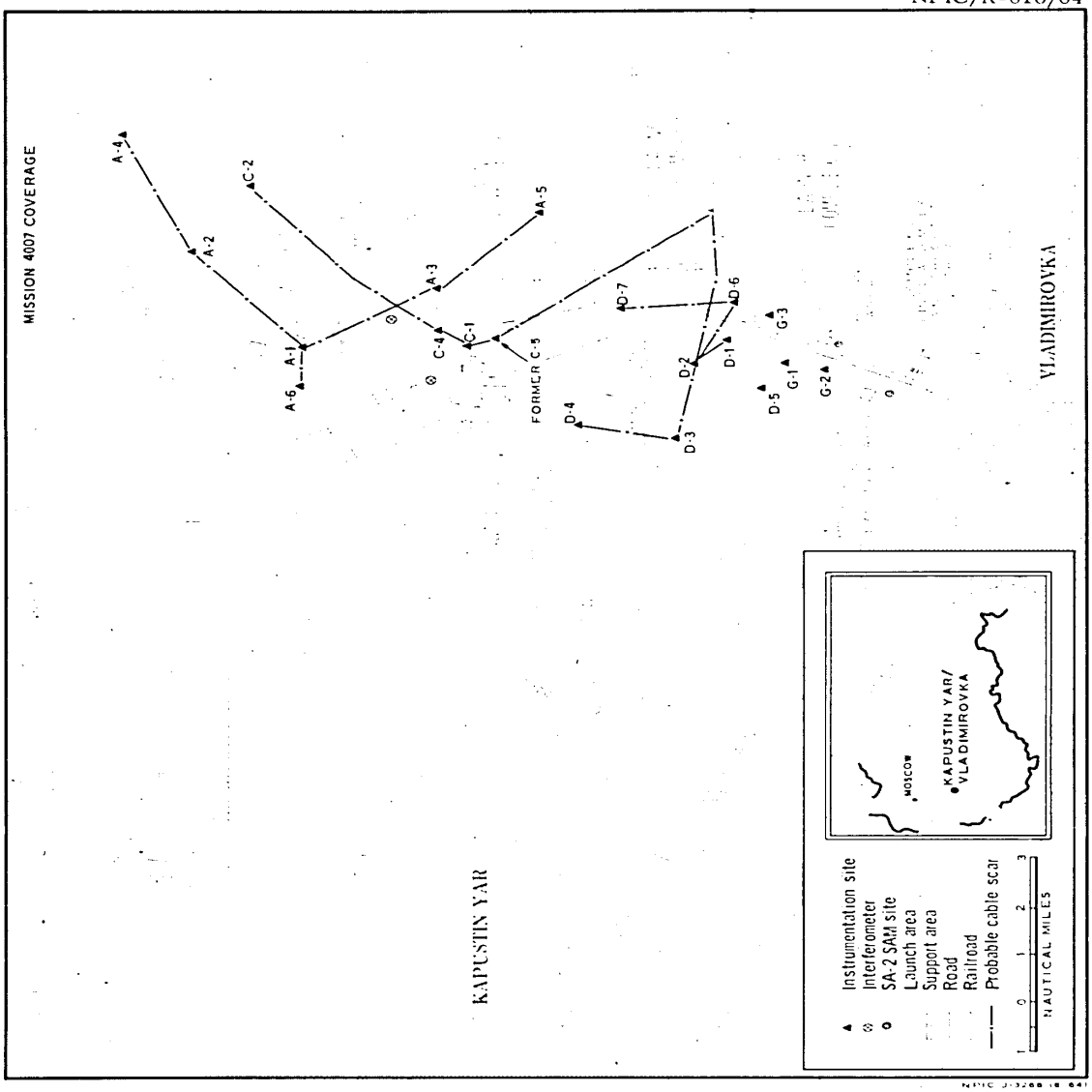


FIGURE 1. MISSION 4007 COVERAGE OF KAPUSTIN YAR VLADIMIROVKA MISSILE TEST CENTER.

25X1

25X1

25X1

NPIC/R-810/64

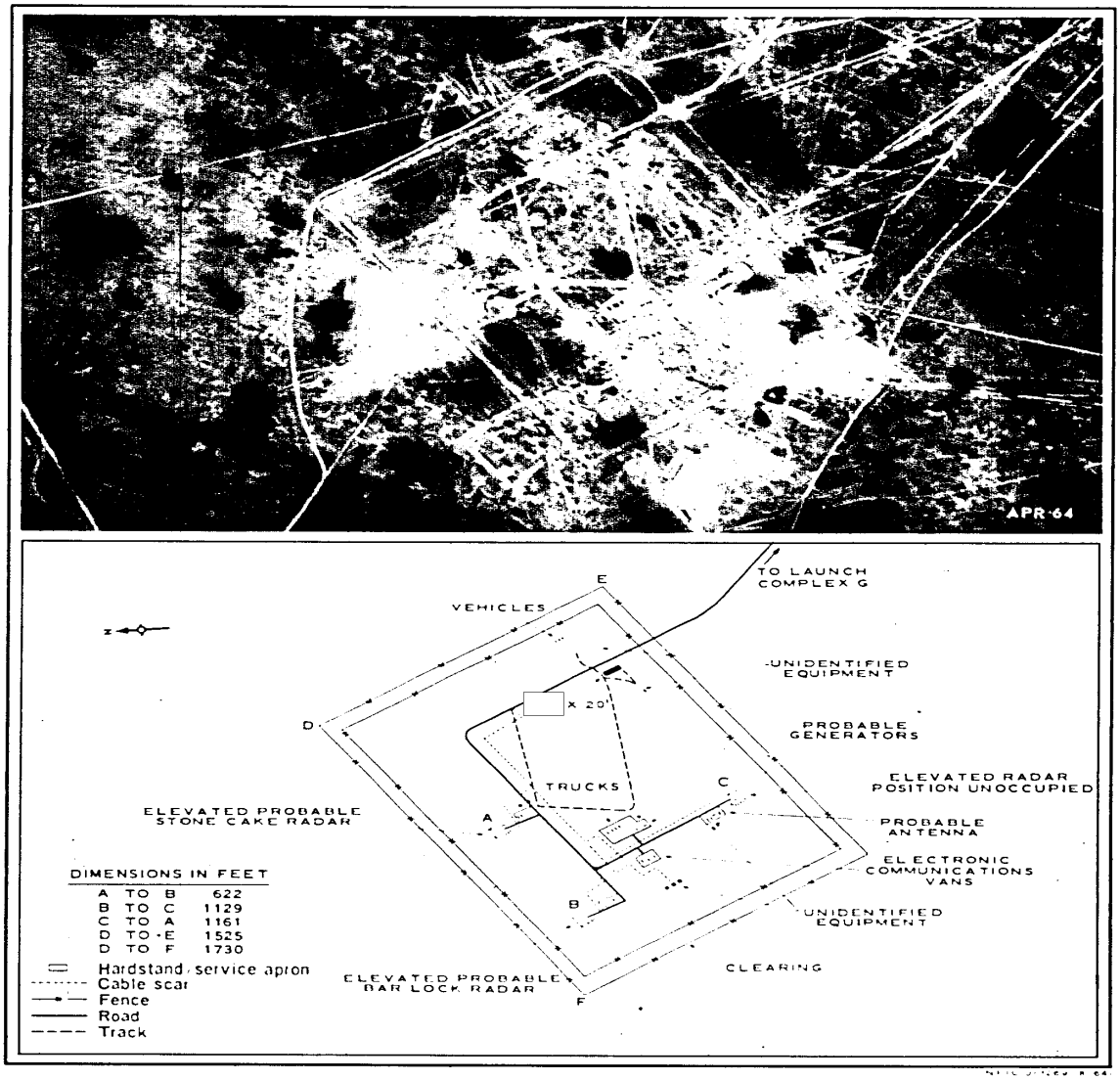


FIGURE 2. INSTRUMENTATION SITE G-1.

25X1

25X1

25X1

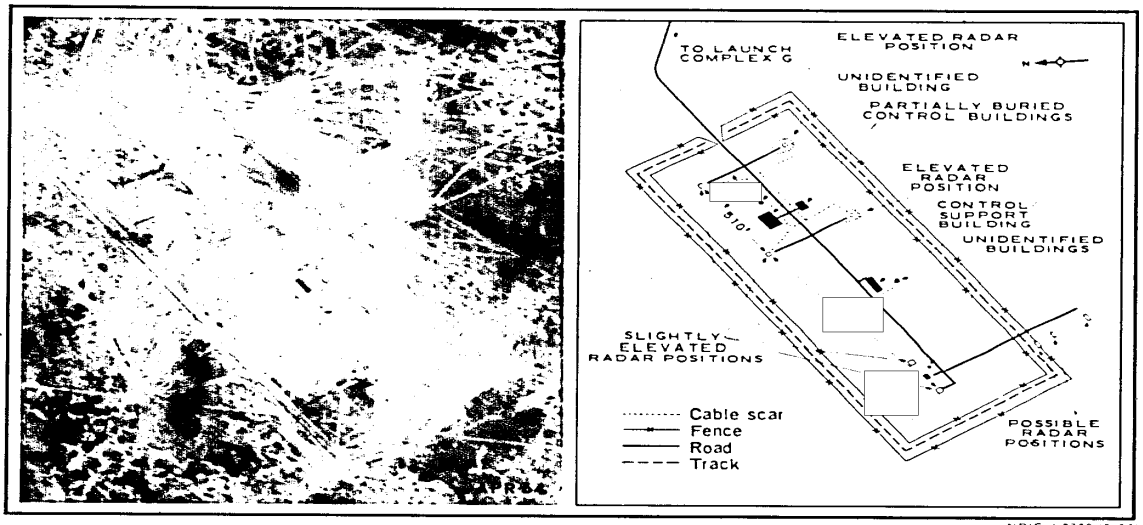


FIGURE 3. INSTRUMENTATION SITE G-2.

A service apron containing probable vans and equipment is located at the base of each of the three radar positions, which are all interconnected by cable scars.

A probable communications area is located in the western part of the site. It contains 3 electronic communications vans on a hardstand and 2 smaller pieces of unidentified equipment just southwest of the hardstand. A hardstand near the center of the site contains 4 trucks and 5 probable generators. The only building of significant size is a [redacted] structure just inside the site entrance. Distances and angles of the radar positions, relative to one another, are shown on Figure 2.

Instrumentation Site G-2

Site G-2 (Figure 3) is located at 48-24-15N 46-14-10E, one nm south-southwest of Site G-1. It is enclosed by a double security fence and is served by an improved road from the east. Site orientation is the same direction as that of Site G-1 (Figure 2). Sites G-1 and G-2 have certain similar characteristics, indicating they may perform a similar function.

Site G-2 contains two elevated radar positions identical to those at Site G-1, although they are unoccupied. A line perpendicular to an imaginary line connecting these two radar positions would be oriented approximately 153/333 degrees, the same orientation as a similar line drawn at Site G-1. A slightly elevated radar position is located approximately 520 feet to the rear and northwest of each of the two elevated radar positions. All four positions are interconnected by cable scars. Two more slightly elevated radar positions are located to the southwest, and are identical in appearance to the rear positions.

Two partially buried control buildings are located toward the notheast end of the site, one

25X1

25X1

25X1

25X1

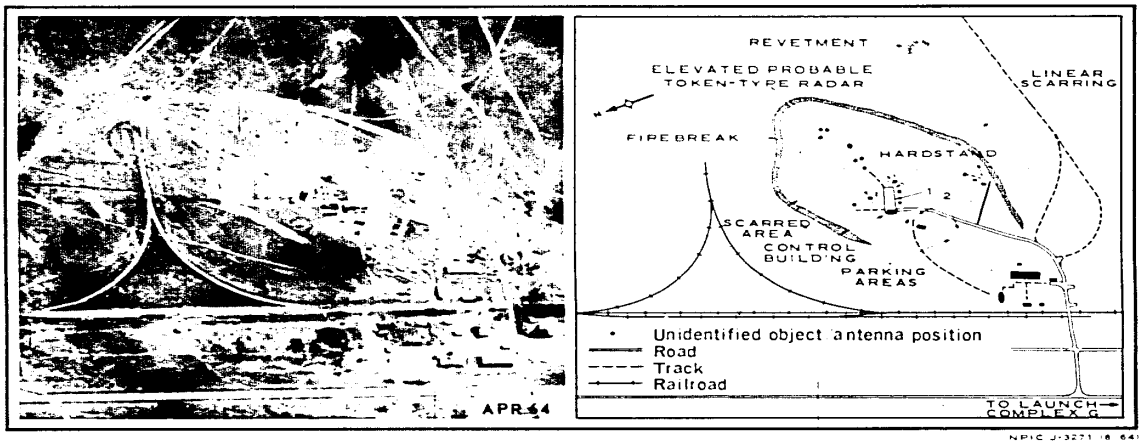


FIGURE 4. INSTRUMENTATION SITE G-3.

on each side of the main road. The larger one [redacted] A control/support building is centrally located. [redacted] Three small unidentified buildings are also located within the site.

25X1
25X1

Several possible radar positions are located just east of the southern tip, and outside the fenced limits of the site. They may have been present prior to the radar positions within the site.

Instrumentation Site G-3

Site G-3 (Figure 4) is located at 48-26-00N 46-16-27E, 3 nm south-southwest of Launch Site 1D, on the east side of the railroad just south of its turning "Y."

This site has been greatly enlarged since first observed, and Mission 4007 photography shows it to be very active--a conclusion based on the amount of electronic equipment present and the amount of track activity in and around the site.

The heart of Site G-3 is located at the terminus of an improved road from the southwest where a control building with a large hardstand extending eastward is located. There are at least eight pieces of electronic equipment (probable vans and generators) on the eastern (forward) apron (Item 1). A probable TOKEN-type radar is positioned on a large earth mound adjacent to the northeast corner of the eastern apron and a second probable TOKEN-type antenna is located on a large earth mound just north of the same apron.

Numerous probable electronic vans/equipment positioned on graded parking areas are located south and west of the control building (Item 2). Additional control and support buildings, including one large, one medium and 4 smaller buildings, are located just east of the railroad along the site road entrance. There are unidentified objects and positions throughout the site, their small scale precluding identification. Most of the site is surrounded by a firebreak.

25X1

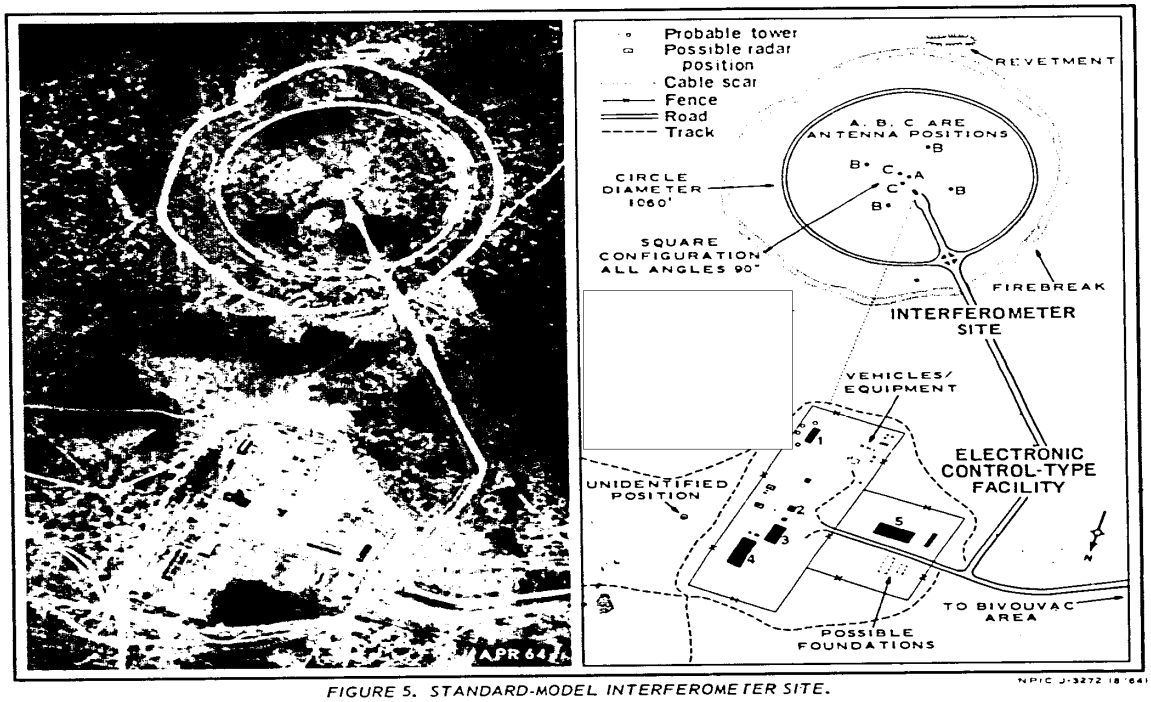


FIGURE 5. STANDARD-MODEL INTERFEROMETER SITE.

INTERFEROMETER (PHASE MEASURING) INSTRUMENTATION SITES

The presence of three USSR standard-model interferometer sites and one previously reported electronic facility 2/ now identified as a new-type interferometer site at and near the KY/ Vlad MTC rangehead indicates a heavy reliance on this system's tracking function. (Two of the standard-model sites are not covered by Mission 4007 photography, and are not described in this report. They are located at 48-11-40N 46-21-20E, near Verkniy Baskunchat, and at 49-09-50N 46-52-10E, near Elton.)

Identification of the new-type interferometer site was based on a comparison study with a long baseline interferometer system named MISTRAM, being evaluated at the United States Atlantic Missile Range. MISTRAM was designed and developed by the Defense Systems Department of General Electric.

One of the most difficult requirements of range-testing ballistic missiles is that of obtaining precise measurement of the missile trajectory as a function of time. MISTRAM not only fulfills this basic requirement, but includes other significant features as well. Operating independently of other range systems, it can acquire a launched missile, accurately track

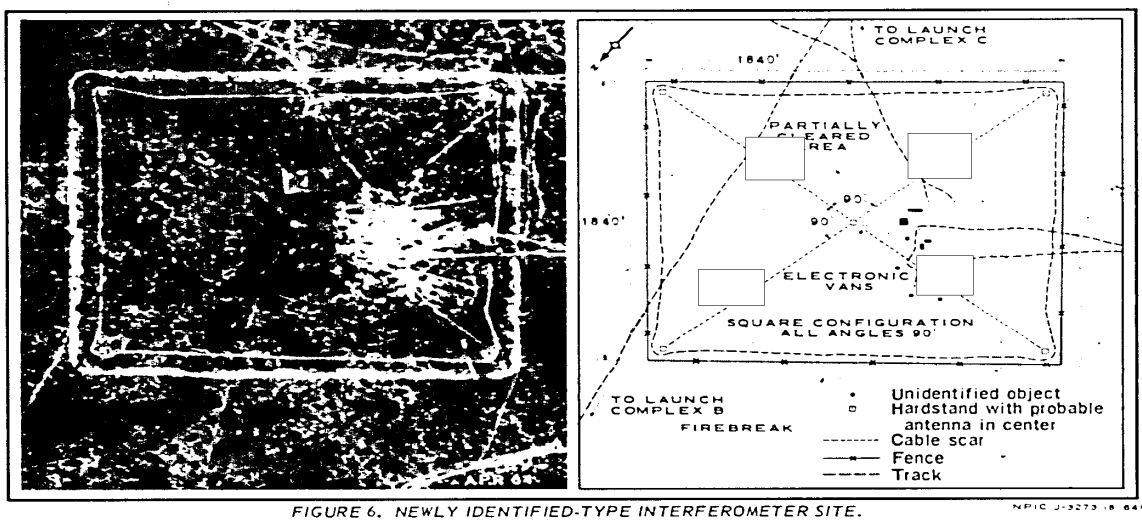


FIGURE 6. NEWLY IDENTIFIED-TYPE INTERFEROMETER SITE.

its flight through space, measure its position and velocity vectors in real time, and transmit this trajectory data to external computers.

Standard-Model Interferometer Site

A USSR standard-model interferometer site (Figure 5) is located at 48-37-40N 46-12-10E, just east of the main road and railroad, to the rear of Launch Complex C.

There is no discernible difference between this site and other standard-model interferometer sites in the USSR. However, a comparatively large electronic, control-type facility secured by a single fence is located just north, and associated with this site. It contains five large control/support buildings, including one, in the southeast portion of the facility, with four 20-to 30-foot probable towers adjacent to it. Two elevated possible radar positions, which appear to be occupied, are located near the center-front of the facility, adjacent to its east fence line. Several small buildings and unidentified objects are scattered throughout the facility and a parking area containing at least 12 vehicles/pieces of equipment is located in the southern part of the facility.

New-type Interferometer Site

A new-type interferometer site (Figure 6), previously reported only as an electronic facility, is located at 48-38-35N 46-16-25E, 2 nm north-northwest of Launch Area 1C. It is composed of two baselines (cable scars) each [redacted] which bisect at right angles into four [redacted] legs. There appear to be single antennas at the center of [redacted] hardstand at the bisection point and on hardstands of the same size at the end of each [redacted] leg. Three electronic vans are parked side-by-side next to the center hardstand and at least 5 control/support buildings are situated southwest of the center hardstand. The entire site is surrounded by a single security fence measuring 1,840 feet on each side. It is served by a track from the older, standard-model interferometer site.

PROBABLE RADIO/OPTICAL INSTRUMENTATION SITES

Mission 4007 photography covered many instrumentation sites at KY Vlad MTC which cannot be associated with conventional radar or interferometer tracking techniques. Groups of these sites are usually arranged in some type of uniform geometrical configuration, such as "V" or modified "V", "L", or a simple linear arrangement.

Since no radar reflectors or interferometers were observed at any of these sites (as they were at other sites), it is probable that radio/optical tracking, guidance, and associated recording equipment are the primary types of instrumentation at these sites.

Probable radio/optical instrumentation sites have been grouped in this report according to the launch complex they support, where support is obvious, and according to their proximity to a launch complex, where support is not as obvious.

They have been observed in the following groupings: a modified "V" configuration of 5 forward sites and one rear site (supporting Launch Complex A); a modified "V" configuration of at least 4 sites (supporting Launch Complex C); an "L" or "right angle" configuration of 3 sites (probably supporting Launch Complex D); 2 sites arranged in a linear north-south configuration (also probably supporting Launch Complex D); and 2 sites with no apparent configurational relationship to other sites or to each other (D-5 in the Launch Complex D area and D-1, the probable operational control center, formerly range control center).

Certain similarities which exist among the various configurations are discussed in this report.

LAUNCH COMPLEX A INSTRUMENTATION SITES

Launch Complex A instrumentation at KY/Vlad MTC consists of six sites designated site A-1 (the probable operational control center), forward sites A-2 through A-5 in a modified "V" configuration with site A-1 at the vertex, and site A-6, to the rear of site A-1.

Probable cable scars and tracks connect the sites. The open end of the modified "V" faces the probable direction-of-fire from Launch Complex A. No radar reflectors or mounds could be identified at the sites, indicating their equipment is probably optical/conventional radio-associated. A description of each site follows.

Site A-1,
Probable Operational Control Center

Site A-1, the probable operational control center for instrumentation supporting Launch Complex A (Figure 7), is located at 48-41-40N 46-15-40E, at the vertex of the modified "V" formed by five of the "A" instrumentation sites. It contains at least 16 buildings and at least 14 vehicles/vans (numbers keyed to Figure 7):

1. A 115- by 25-foot single-story building with a 32- by 25-foot two-story center section, facing the launch area.
2. A 50- by 25-foot single-story, flat-roofed building with a raised center section approximately 25 feet high.
3. Three single-story, gable-roofed buildings, each about 35 feet square, arranged in a small, triangular pattern.
4. A 40-foot-square single-story, flat-roofed building.
5. A 35- by 15-foot building.

25X1

25X1

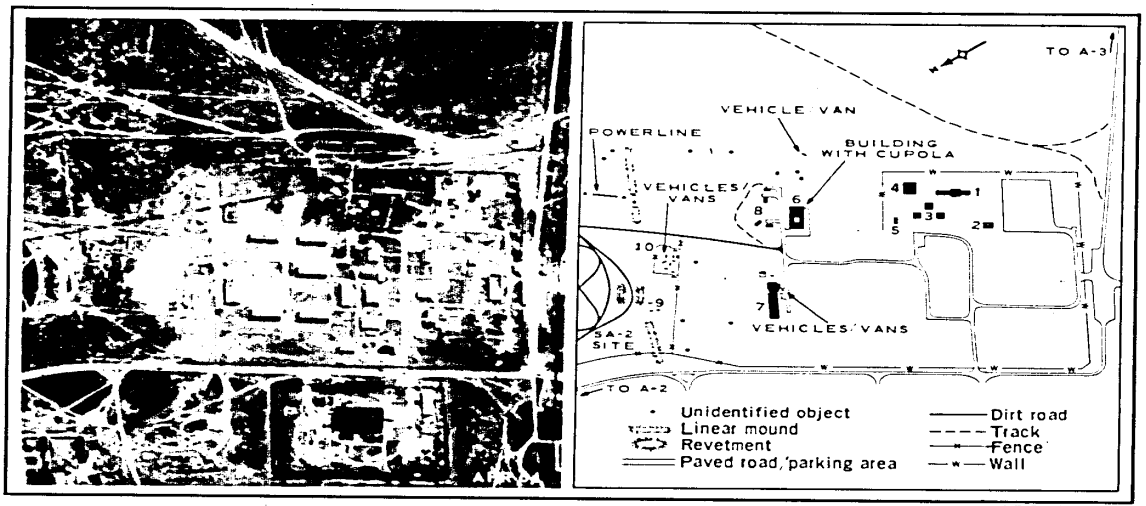


FIGURE 7. INSTRUMENTATION SITE A-1.

6. A 105- by 50-foot building with a 30-foot-square cupola on its flat roof.

7. A 230- by 35-foot very low building with 4 dormers.

8. Four small buildings, 3 of which are connected by a concrete drive to (6) and (7) above.

9. Three very small buildings.

10. Ten vehicles/vans in a group.

Site A-1 also contains 12 unidentified objects.

Forward Instrumentation Site A-2

Site A-2 (Figure 8) is located at 48-45-00N 46-21-00E, 4.9 nm from Site A-1, on the northeast leg of the modified "V". It is enclosed by a firebreak and contains a 20-foot-square centrally located probable observation/control building, a small probable building, 6 unidentified objects (2 of which appear to be cable-connected to the probable observation/control building), and a small probable excavation. The probable observation/control building appears to have a mast on its roof.

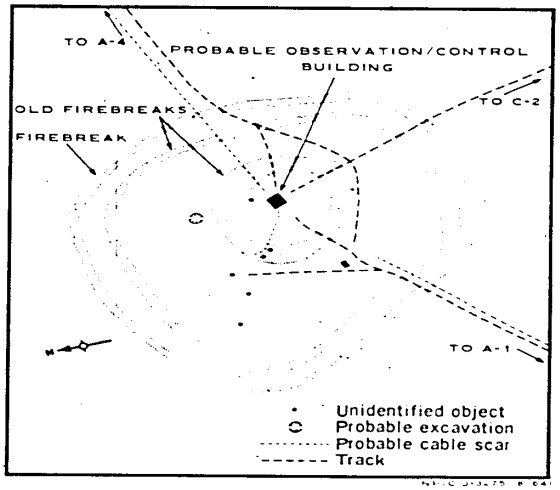


FIGURE 8. INSTRUMENTATION SITE A-2.

25X1

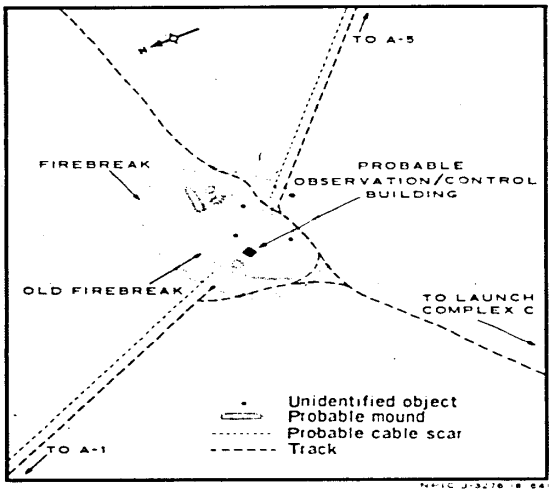


FIGURE 9. INSTRUMENTATION SITE A-3.

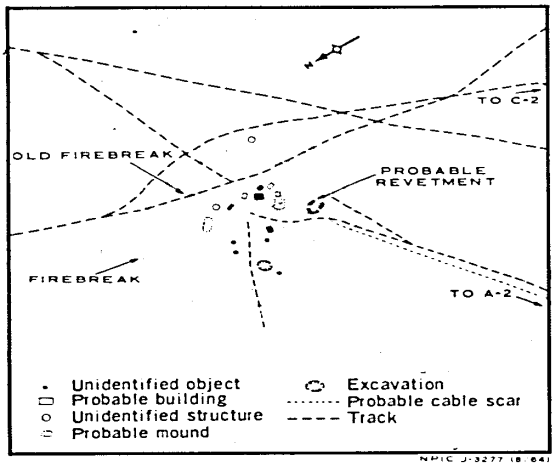


FIGURE 10. INSTRUMENTATION SITE A-4.

Foward Instrumentation Site A-3

Site A-3 (Figure 9) is located at 48-37-00N 46-18-20E, 5.1 nm from Site A-1 on the southeast leg of the modified "V". It is enclosed by a firebreak and contains a probable observation/control building identical to that at Site A-2, 4 randomly located probable earth mounds, and 4 unidentified objects.

Forward Instrumentation Site A-4

Site A-4 (Figure 10) is located at 48-48-20N 46-28-00E, 9.9 nm from Site A-1 on the northeast leg of the modified "V". It is enclosed by a firebreak and contains 4 buildings, 3 probable buildings, 2 unidentified structures, 3 probable small mounds, a small excavation, a probable revetment, and 4 unidentified objects. This site has a somewhat more cluttered appearance than the other instrumentation sites, including Site A-5, its opposite number. No probable observation/control building can be identified.

Forward Instrumentation Site A-5

Site A-5 (Figure 11) is located at 48-33-30N 46-23-30E, 9.9 nm from Site A-1 on the southeast leg of the modified "V". It is enclosed by the characteristic firebreak and contains one

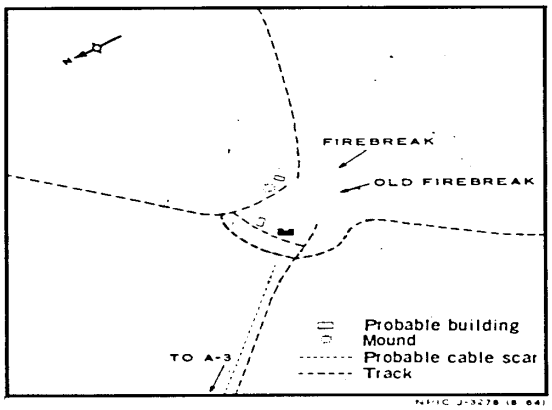


FIGURE 11. INSTRUMENTATION SITE A-5.

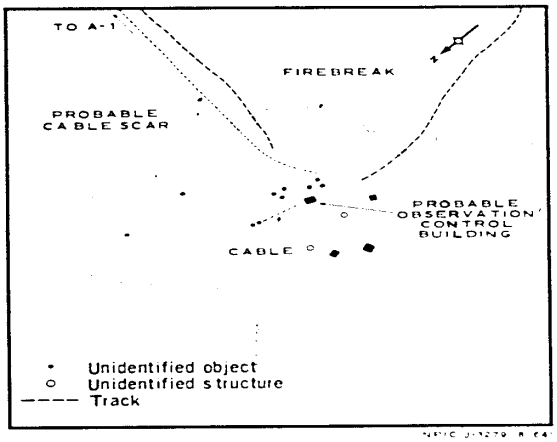


FIGURE 12. INSTRUMENTATION SITE A-6.

building, 2 probable buildings, and a mound. There was no stereo coverage of this site, thus hampering interpretation. No probable observation/control building can be identified.

Rear Instrumentation Site A-6

Site A-6 (Figure 12) is located at 48-41-30N 46-13-00E, 1.7 nm west of Site A-1. It is enclosed by a firebreak and contains a probable observation/control building identical to those at Sites A-2 and A-3, 3 other buildings, 2 unidentified structures, and 11 unidentified objects. A cable extends north from the probable observation/control building to 2 of the unidentified objects.

LAUNCH COMPLEX C INSTRUMENTATION SITES

Launch Complex C instrumentation includes at least four sites which, similar to Launch Complex A sites, form a modified "V". Site C-1, the probable operational control center, is at the vertex, and Sites C-2 through C-4 form the legs. Nothing significant was observed at what was formerly the location of Instrumentation Site C-5. In addition, Site C-3 was not covered by Mission 4007 photography and is not described in this report.

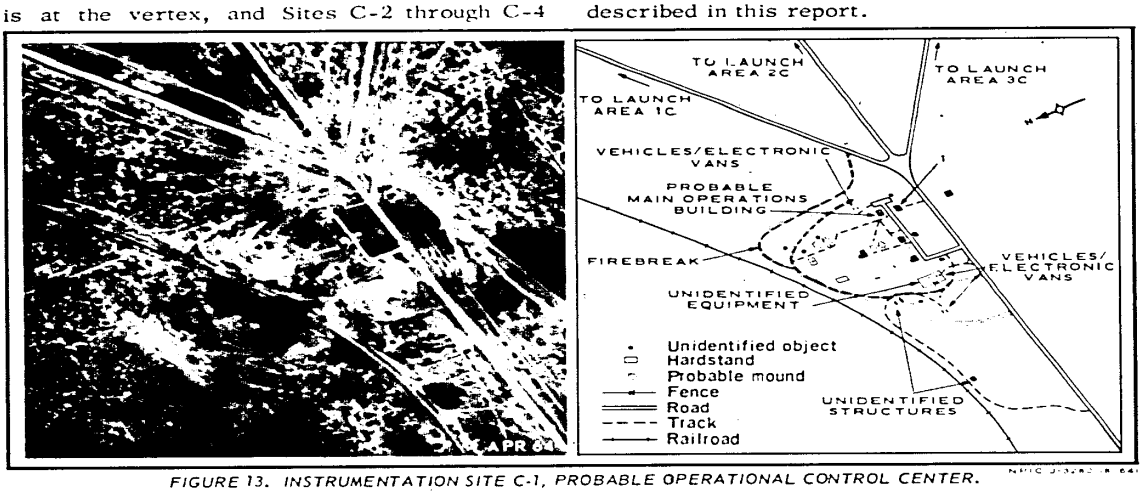


FIGURE 13. INSTRUMENTATION SITE C-1, PROBABLE OPERATIONAL CONTROL CENTER.

Site C-1,
Probable Operational Control Center

Site C-1 (Figure 13), located at 48-36-00N 46-15-40E, is nearly surrounded by firebreaks which are less distinct than those at other sites. The site contains a 50- by 30-foot probable main operations building with a raised offset center section 20 feet square and 30 feet high, 8 additional buildings including a 40- by 30-foot building with a 15-foot-square platform near one end of its roof (Item 1), 8 vehicles/electronic vans, other unidentified equipment, several hardstands (some unoccupied and some with unidentified equipment), 4 probable mounds, 2 small unidentified structures, and at least 5 unidentified objects. A rail spur leading to Launch Area 1C passes immediately north of this site.

Instrumentation Site C-2

Site C-2 (Figure 14) is located at 48-43-20N 46-25-20E, 9.9 nm from Site C-1 at the northeast end of the modified "V". It is enclosed by a firebreak and contains a 20-foot-square probable observation/control building, 2 probable vehicles/vans, and 5 unidentified objects. The probable observation/control building has an unidentified antenna on its roof.

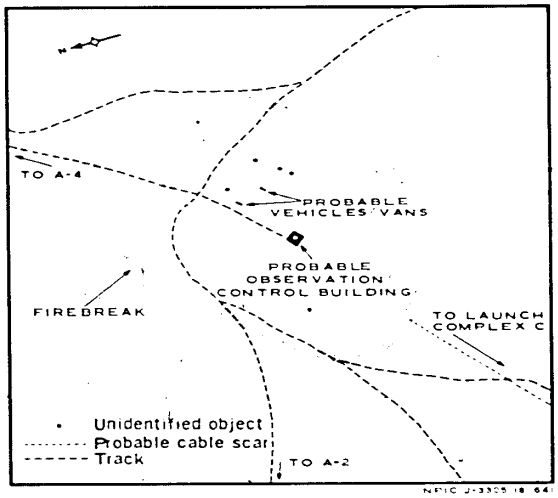


FIGURE 14. INSTRUMENTATION SITE C-2.

Instrumentation Site C-4

Site C-4 (Figure 15) is located at 48-36-40N 46-16-20E, 0.8 nm west of Launch Area 1C. It consists of a fence-secured rectangular area surrounded by an indistinct double firebreak

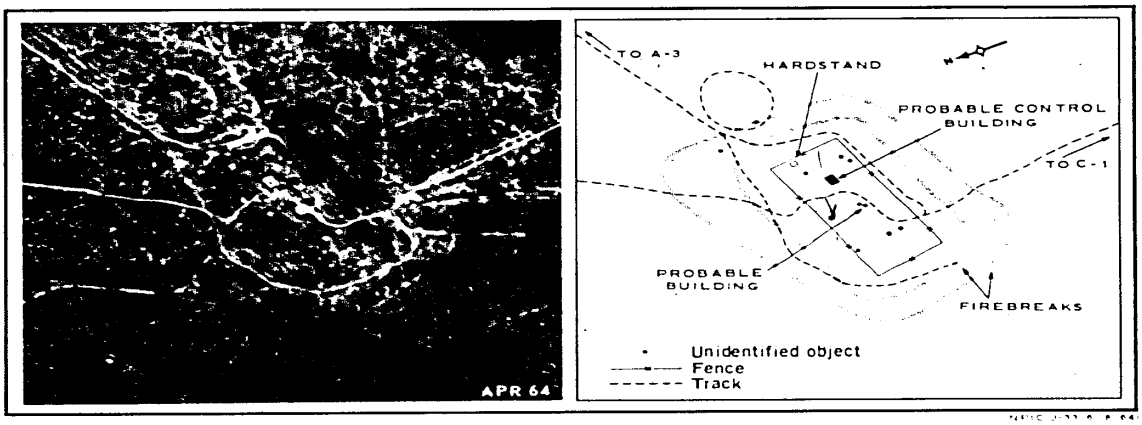


FIGURE 15. INSTRUMENTATION SITE C-4.

containing a 55- by 45-foot gable-roofed probable control building, two 20- by 15-foot gable-roofed buildings, a probable building, and at least 7 unidentified objects. The probable control building has an unidentified structure on its roof.

LAUNCH COMPLEX D ASSOCIATED INSTRUMENTATION SITES

Instrumentation probably in support of Launch Complex D is not as well defined in its geometrical relationship to the Complex as is instrumentation at Launch Complexes A and C. Launch Complex D associated sites have been divided into four groups:

1. "L" or "right angle" configuration, Sites D-2 through D-4.
2. Linear north-south configuration, Sites D-6 and D-7.
3. Site D-1, probable operational control center, no apparent configurational relationship.
4. Site D-5, no apparent configurational relationship.

"L" or "RIGHT ANGLE" CONFIGURATION

Sites D-2, D-3, and D-4 are located generally behind Launch Complex D, in an "L" or "right angle" configuration with the angle bisector oriented at approximately 56 degrees. The two end sites, D-2 and D-4, are similar in appearance. Site D-3 contains a greater number of buildings and unidentified objects, within a larger area, than the other two.

Instrumentation Site D-2

Site D-2 (Figure 16) is located at 48-28-30N 46-13-50E, 3.5 nm west of Launch Complex D. It is enclosed by a double firebreak and contains a fence-secured building with a raised center section identical to those at Sites A-1 and C-1, a probable bunkered building, and 9 unidentified objects/pieces of equipment. Four of the unidentified objects/pieces of equipment are connected to the fenced building by a probable cable.

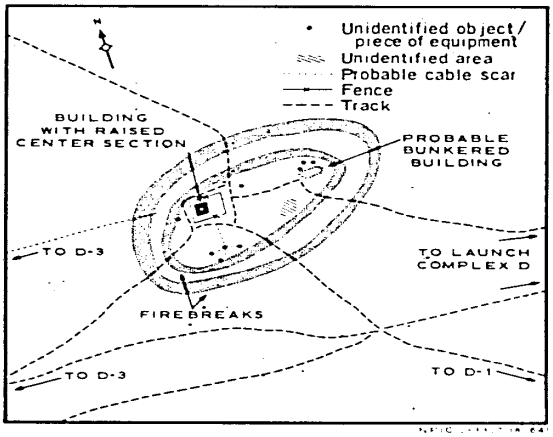


FIGURE 16. INSTRUMENTATION SITE D-2.

Instrumentation Site D-3

Site D-3 (Figure 17) is located at 48-29-00N 46-09-00E, 6.5 nm west of Launch Complex D. It is surrounded by two firebreaks and is fence secured. It contains 10 buildings, including a 140- by 40-foot administration-type building, and 5 vehicles/vans (one supporting an unidentified reflector/antenna), 2 circular mounds, and 20 unidentified objects.

Instrumentation Site D-4

Site D-4 (Figure 18) is located at 48-32-10N 46-10-10E, 3.2 nm north-northeast of Site D-3. It is surrounded by a double firebreak and contains 3 buildings (one with a raised offset center section identical to those at Sites D-2, A-1, and C-1), and 3 unidentified objects.

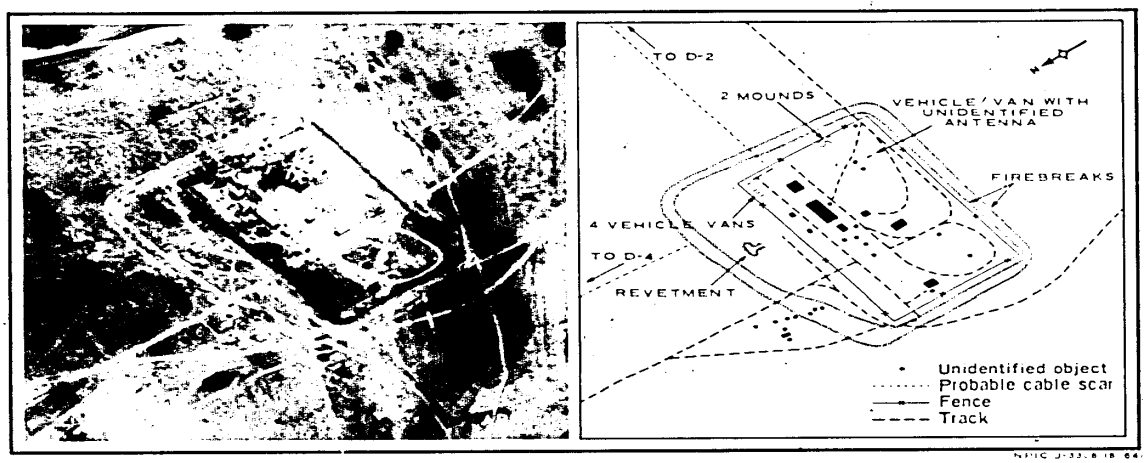


FIGURE 17. INSTRUMENTATION SITE D-3.

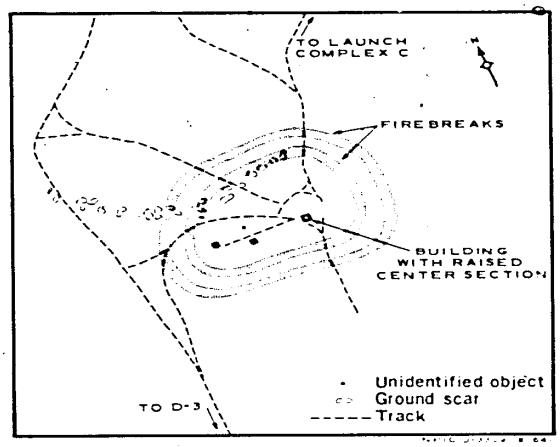


FIGURE 18. INSTRUMENTATION SITE D-4.

LINEAR NORTH-SOUTH CONFIGURATION

Sites D-6 and D-7 are located 4.3 nm apart in a north-south line, one on each side of Launch Complex D. They are similar in appearance, and are interconnected by probable cable, and appear to face east.

Instrumentation Site D-6

Site D-6 (Figure 19) is located at 48-27-00N 46-17-55E, 1.5 nm east of Site D-1. It is surrounded by a double firebreak and a security fence. It contains a probable observation/control building identical to those found at many of the A and C Sites, a smaller building of significant

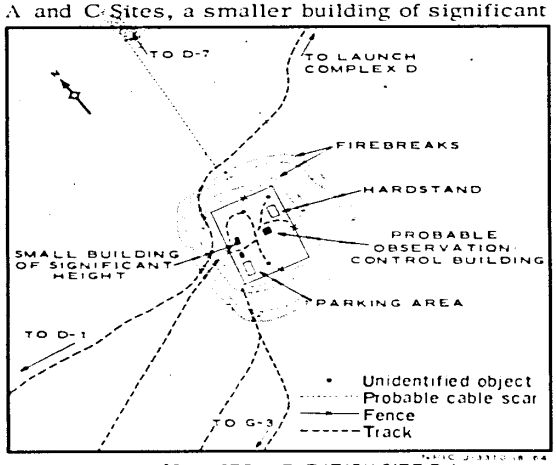


FIGURE 19. INSTRUMENTATION SITE D-6.

height, one additional small building, a hardstand without vehicles or pieces of equipment, one parking area, and three unidentified objects.

Instrumentation Site D-7

Site D-7 (Figure 20) is located at 48-31-25N 46-17-55E, 4.3 nm north of Site D-6 and 4.3 nm north-northeast of Site D-1. Like Site D-6, Site D-7 is surrounded by a double firebreak and a fence. It contains the familiar probable observation/control building observed at Site D-6 and many of the A and C Sites, one other building, and five unidentified objects.

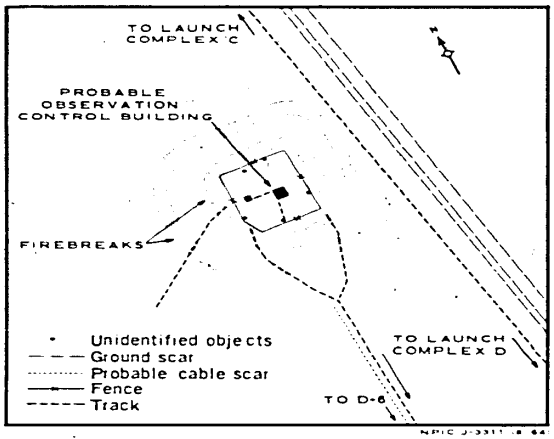


FIGURE 20. INSTRUMENTATION SITE D-7.

SITE D-1, PROBABLE OPERATIONAL CONTROL CENTER

Site D-1 (Figure 21), with no apparent configurational relationship to any other site, is located at 48-27-20N 46-15-40E, 2.5 nm southwest of Launch Complex D. It is protected by a double firebreak and a security fence, and contains a two-story administration building, a row of 4 control-type buildings, 6 additional buildings, 20 vehicles/vans (13 parked in a row inside a security fence, a single one which supports a probable antenna, 2 probable communications vans in a third area, and 4 probable vans in a fourth area), 2 probable bunkers, 7 probable mobile generators, and 12 unidentified objects. A powerline appears to enter the site from the east-southeast.

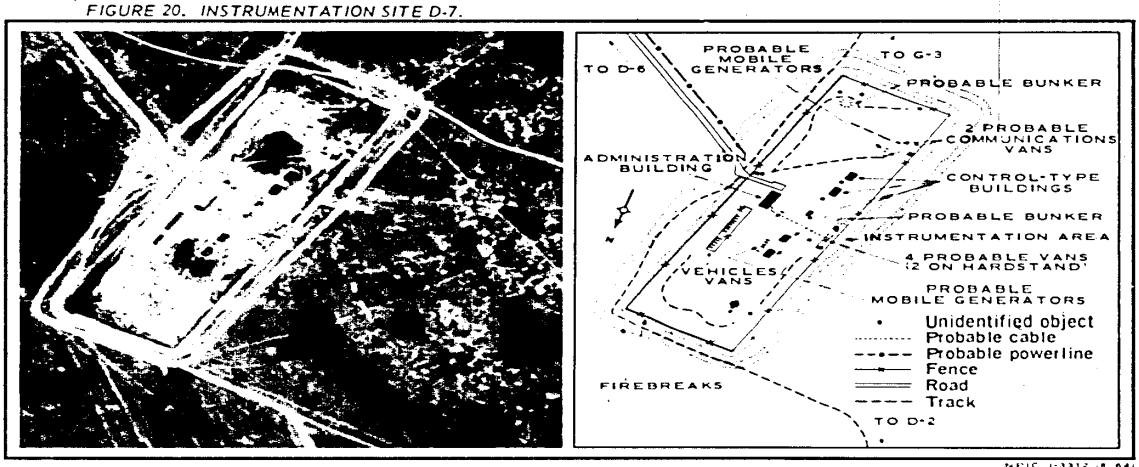


FIGURE 21. INSTRUMENTATION SITE D-1, PROBABLE OPERATIONAL CONTROL CENTER.

25X1

25X1

INSTRUMENTATION SITE D-5

Site D-5 (Figure 22), with no apparent configurational relationship to Site D-1 or to any other site, is located at 48-26-25N 46-13-00E, 2.1 nm west-southwest of Site D-1. The site is nearly square and is enclosed by a firebreak and a security fence. It contains a long gable-roofed building, a smaller flat-roofed building, another small building, and a probable electronic vehicle/van. Several areas near the long gable-roofed building contain unidentified equipment apparently cable-connected to the building. Several more areas contain unidentified objects/pieces of equipment. A probable powerline enters the site from the south.

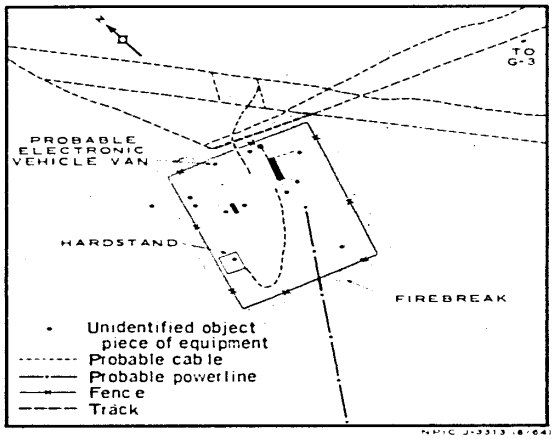


FIGURE 22. INSTRUMENTATION SITE D-5.

25X1

25X1

25X1

NPIC/R-810/64

REFERENCES

PHOTOGRAPHY

Mission		Classification
4007		TOP SECRET RUFF

25X1

MAPS OR CHARTS

ACIC. US Air Target Chart, Series 200, Sheet 0235-22HL, 4th ed, May 63, scale 1:200,000 (SECRET)

DOCUMENTS

1. USAF. DPIR T-57-30, *Instrumentation Facilities of the Kapustin Yar-Vladimirovka Missile Test Center, USSR*, Apr 58 (TOP SECRET CHESS)
2. NPIC. R-84 63, *Launch Complex C, Kapustin Yar Vladimirovka Missile Test Center, USSR, Changes Since December 1959*, May 63 (TOP SECRET CHESS RUFF)

RELATED DOCUMENTS

NPIC. R-1186 64, *Launch Complex A, Kapustin Yar Vladimirovka Missile Test Center, USSR*, May 64 (SECRET/

25X1

NPIC. R-1183 64, *Launch Complex C, Kapustin Yar Vladimirovka Missile Test Center, USSR*, Apr 64 (SECRET/

25X1

REQUIREMENT

NSA. P0432 R39-64

NPIC PROJECT

N-568 64

25X1